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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/739,807	12/20/2000	Joon Tae Kim	0465-0786P	4030
2292	7590	03/04/2005		EXAMINER
		BIRCH STEWART KOLASCH & BIRCH		TRAN, KHAI
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			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	OK
	09/739,807	KIM, JOON TAE	
	Examiner	Art Unit	
	KHAI TRAN	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 09 November 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,6, 13,18 and 21 is/are rejected.
- 7) Claim(s) 2-4, 5, 7-12, 14-17, and 19-20 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

DETAILED ACTION

1. The amendment filed 11/9/2004 has been entered. Claims 1-21 are pending in this Office action.

Claim Rejections - 35 USC § 102

2. Claims 1, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Han (U.S. Pat. 5,809,088).

Regarding claim 1, Han discloses a vestigial sideband (VSB) receiver for receiving signals, as shown in Figures 1, 8-10, comprising: a digital processing part for selecting a desired channel frequency via antenna and converting the desired channel frequency to an intermediate frequency to digitalize a predetermined band of the intermediate frequency (a frequency synthesizer 8, double conversion tuner 2, SAW filter 4, IF amplifier 6, A/D converter, see col. 5, line 28 to col. 6, line 16); a carrier wave restoring part for extracting pilot components from a signal of the digitized pass band to restore carrier waves (a carrier wave restoring part 50); a demodulator for separating components I and Q from the signal of the digitized pass band and multiplying the components with a complex carrier wave (col. 6, lines 23-45, wherein the I and Q components are separated by a phase splitter and multiplies with a complex carrier wave); a timing restoring part for restoring a transmission symbol from the signal I of the demodulated base band (Figure 9 shows that the I₃ is restored in the AFC LPF 84, a second limiter 86, APC 76...).

Regarding claim 21, Han discloses wherein the carrier wave restoring part generates the complex carrier wave proportional to frequency and phase errors associated with pilot signals of the base band (see col. 13, lines 51-55).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6, 13, 18, are rejected under 35 U.S.C. 103(a) as being unpatentable over Han (U.S. Pat. 5,809,088).

Regarding claim 6, Han also discloses the carrier wave restoring part comprising: a pilot extracting part for extracting pilot signals of the components I and Q from the signals of the digitalized pass band as shown in Figure 9, (a LPF and second phase splitter 56, a multiplier 62, a frequency/phase errors from the pilot signals I and Q of the base band (see abstract and col. 2, line 59 to col. 3, line 16); a loop filter as shown in Fig. 9; a numerical control oscillator (NCO 58). Han fails to disclose a use of the loop filter for converting the frequency and phase errors to DC components by filtering. However, Han suggests in col. 2, line 59 to col. 3, line 11 that an output of a limiter 26 for multiplying with output signal (Q signal; sine wave) of the second low pass filter 22 in the mixer 30 and is converted to a direct current (DC) signal. The Dc signal passes through an auto phase control low pass filter (APC-LPF) 32 and controls a voltage-

controlled oscillator (VCO) 34 in order to eliminate the frequency error. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to convert the frequency and phase errors to DC components in order to compensate and correct the frequency and phase errors.

Claim 13 is similar to claim 6. Therefore, claim 13 is rejected under a similar rationale.

Claim 18 is similar to claims 6 and 13. Therefore, claim 18 is rejected under a similar rationale.

Allowable Subject Matter

5. Claims 2-3, 5, 7-12, 14-17, and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments filed 11/09/2004 have been fully considered but they are not persuasive.

Applicant states that the claim invention of claim 1 recited, "a symbol restoring part for restoring a transmission symbol from the signal I of the demodulated based band output from the demodulator. In the Office action, the Examiner equates Applicant's symbol part to Han reference's AFC LPF 84, second limiter 88 and APC LPF 76 in Fig. 9. However, Han's AFC LPF 84 receives its input I3 from a multiplier 62 and not from an output from the multiplier 60 (demodulator). Thus, in Han, there is no

"restoring a transmission signal from the signal I of the demodulated base band output from the demodulator", as recited in claim 1.

In response to the Applicant' argument, Examiner stated that Han reference recites the complex signals I3 and Q3 splitted and output from the mixer 62, in-phase component I3 is simultaneous applied to the frequency error quick response detector 64 and the frequency error precision detector 66. The frequency error precision detector is comprised of the AFC LPF 84 and the second limiter 86. The frequency error precision detector is used to perform demodulation of the I3 component for restoring a transmission symbol. Therefore, claim 1 is anticipated by Han reference.

Applicant states that Han fails to disclose "a loop filter for converting the frequency and phase errors to DC components; and a numerical control oscillator for generating a complex carrier wave proportional to the DC components" as recited in claims 13 and 18.

In response to the Applicant's argument, Examiner states that the loop filter as shown in Fig. 9 for converting the frequency and phase error components by filtering components I3 and Q3 (see col. 13, lines 51-55; and col. 2, line 59 to col. 3, line 11).

Allowable Subject Matter

7. Claims 2-3, 5, 7-12, 14-17, and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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8. The following is a statement of reasons for the indication of allowable subject matter: Han fails to disclose the digital processing part comprising a digital matching filter for passing a band in which information from the digitalized signals exists; a re-sampling part for reducing error between the signals which are digitalized in the A/D converter by using a timing error of current symbols which are restored via the base band signal processing; Han also fails to disclose wherein the pilot extracting part vestigial sideband receiver modulates an IIR low pass filter of a lower degree to sine waves and cosine waves.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Khai Tran
Primary Examiner
Art Unit 2637

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KT

01 March 2005